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(12) **UK Patent Application** (19) **GB** (11) **2 343 645** (13) **A**

(43) Date of A Publication 17.05.2000

(21) Application No 9824712.5

(22) Date of Filing 10.11.1998

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(51) INT CL<sup>7</sup>

B23B 47/34 , B23Q 11/00

(52) UK CL (Edition R )

B3C C1B6H

(56) Documents Cited

GB 2139124 A DE 003140776 A1 FR 002441455 A  
US 5765654 A US 5653561 A US 5160230 A  
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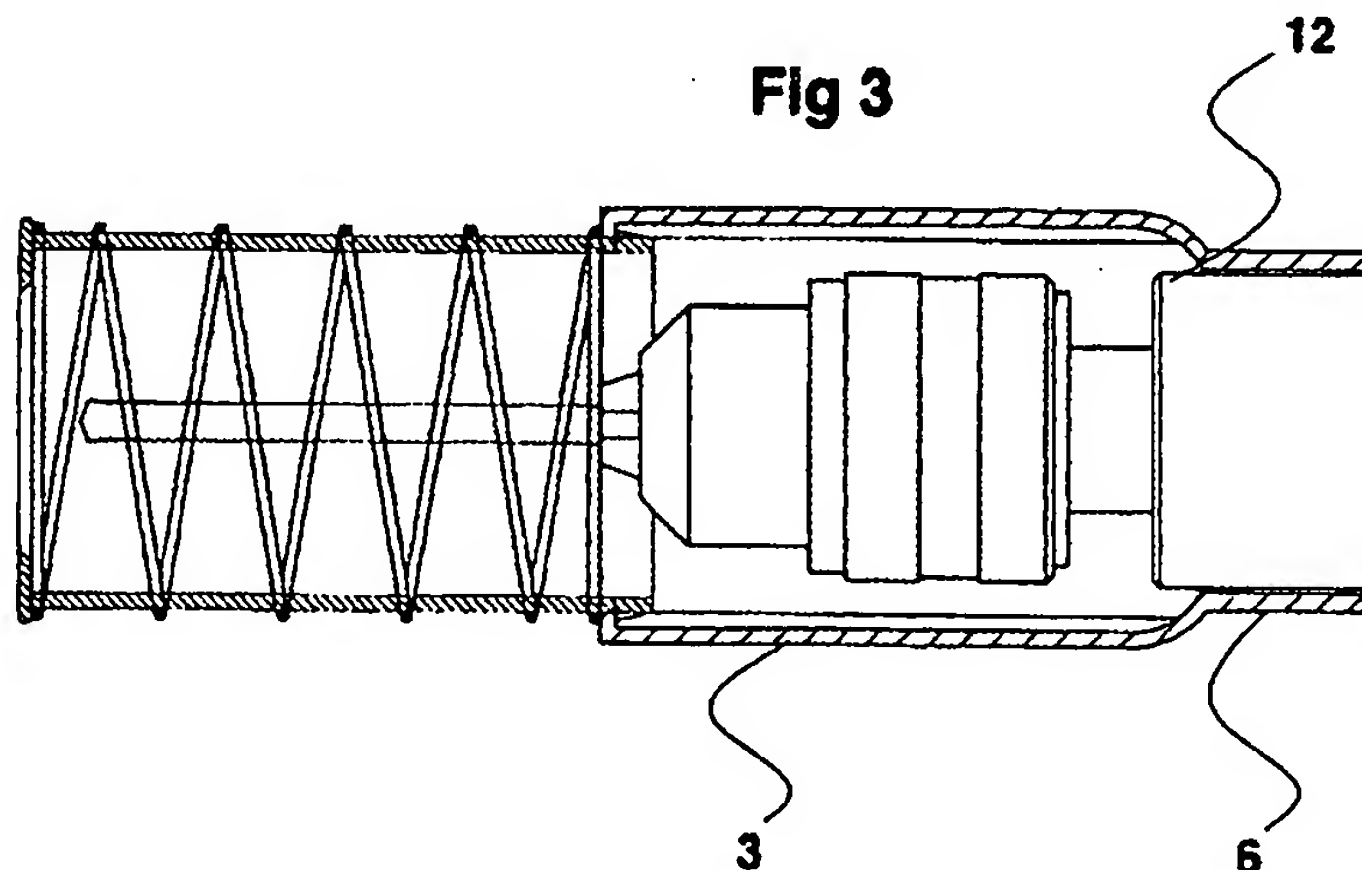
(58) Field of Search

UK CL (Edition P ) B3C , B4C  
INT CL<sup>6</sup> B08B 15/04 , B23B 47/00 47/34 , B23Q 11/00  
ONLINE DATABASES: WPI

(54) Abstract Title

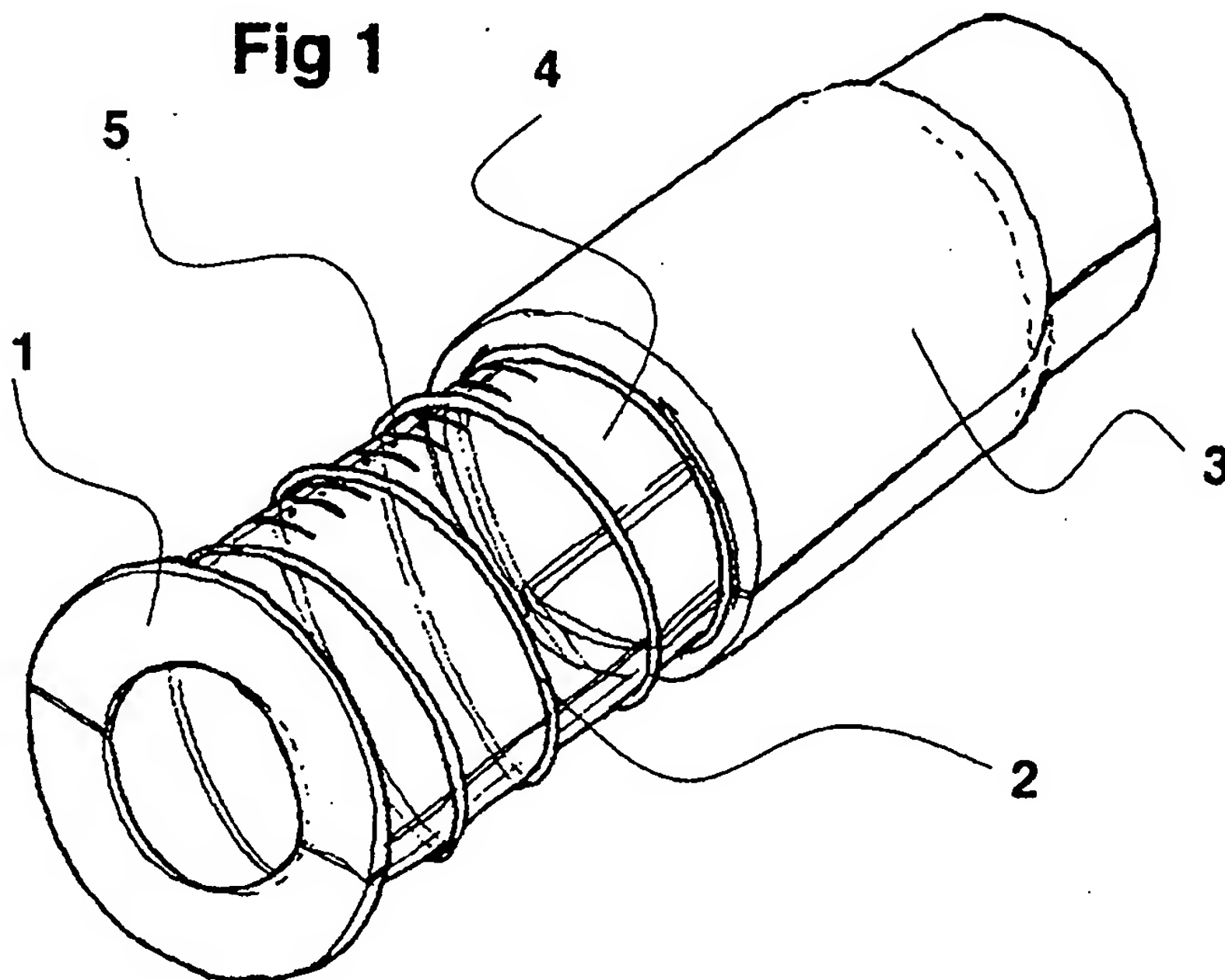
**Debris collection device for a powered hand drill**

(57) A debris collection attachment for a powered hand drill comprises an outer tube 3 having a ring collar 6 which fits onto the collar of a standard drill body. An inner tube (4 fig 1) is slidable within the outer tube. The two tubes are biased apart by means of a compression spring (2 fig 1) and prevented from separation by means of lugs (7 fig 2) on the inner tube cooperating with an annular surface (8 fig 2) on the outer tube. The outer tube acts as a hand grip for a user. In use an outer collar (1 fig 1) at the free end of the inner tube contacts a material surface surrounding the point of drilling. As the drill penetrates the material the assembly telescopes inwards and any debris created by the drilling process is held within the inner tube. A scale 5 marked on the inner tube enables the user to determine the depth of drilling. Both tubes may be made from clear material.

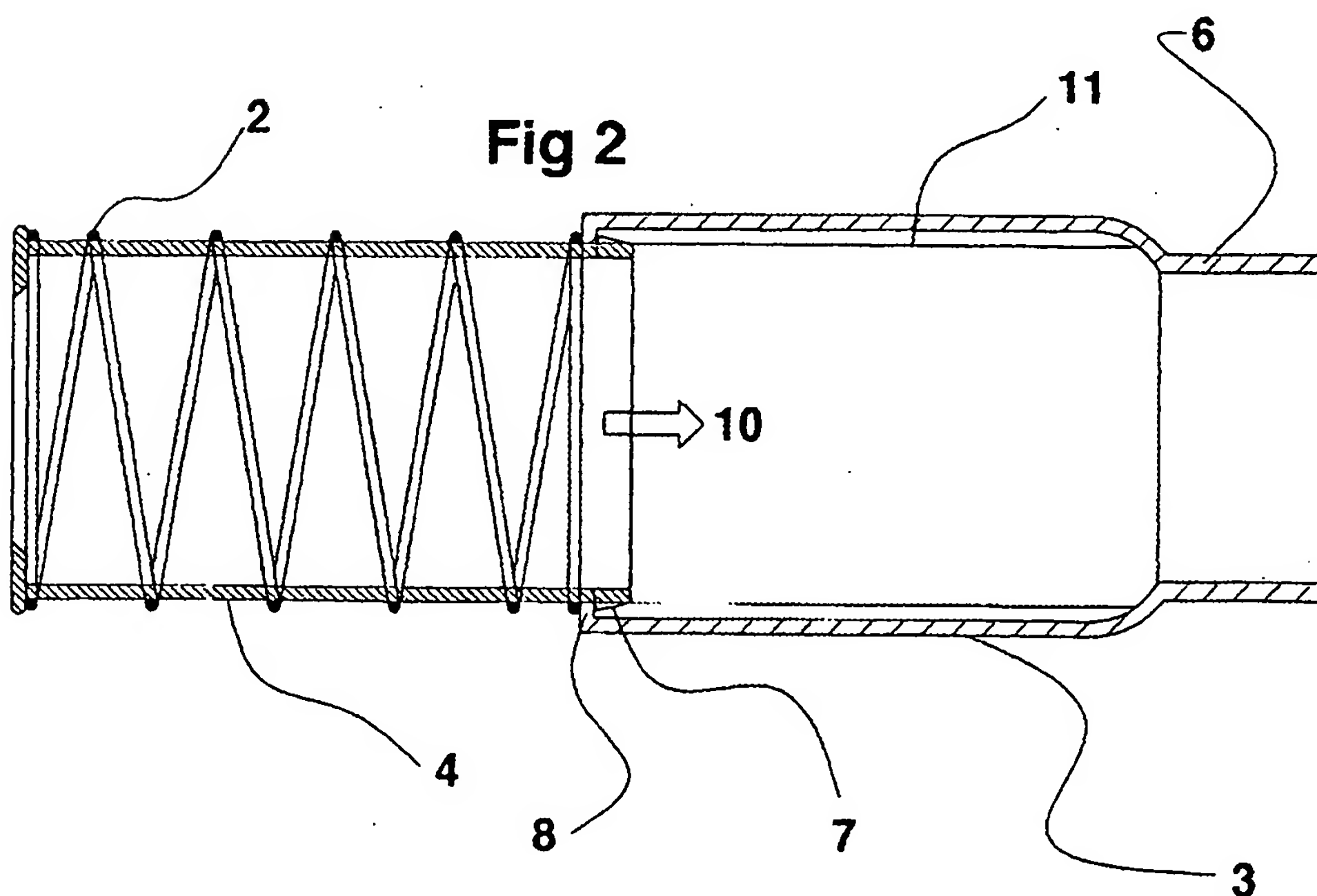


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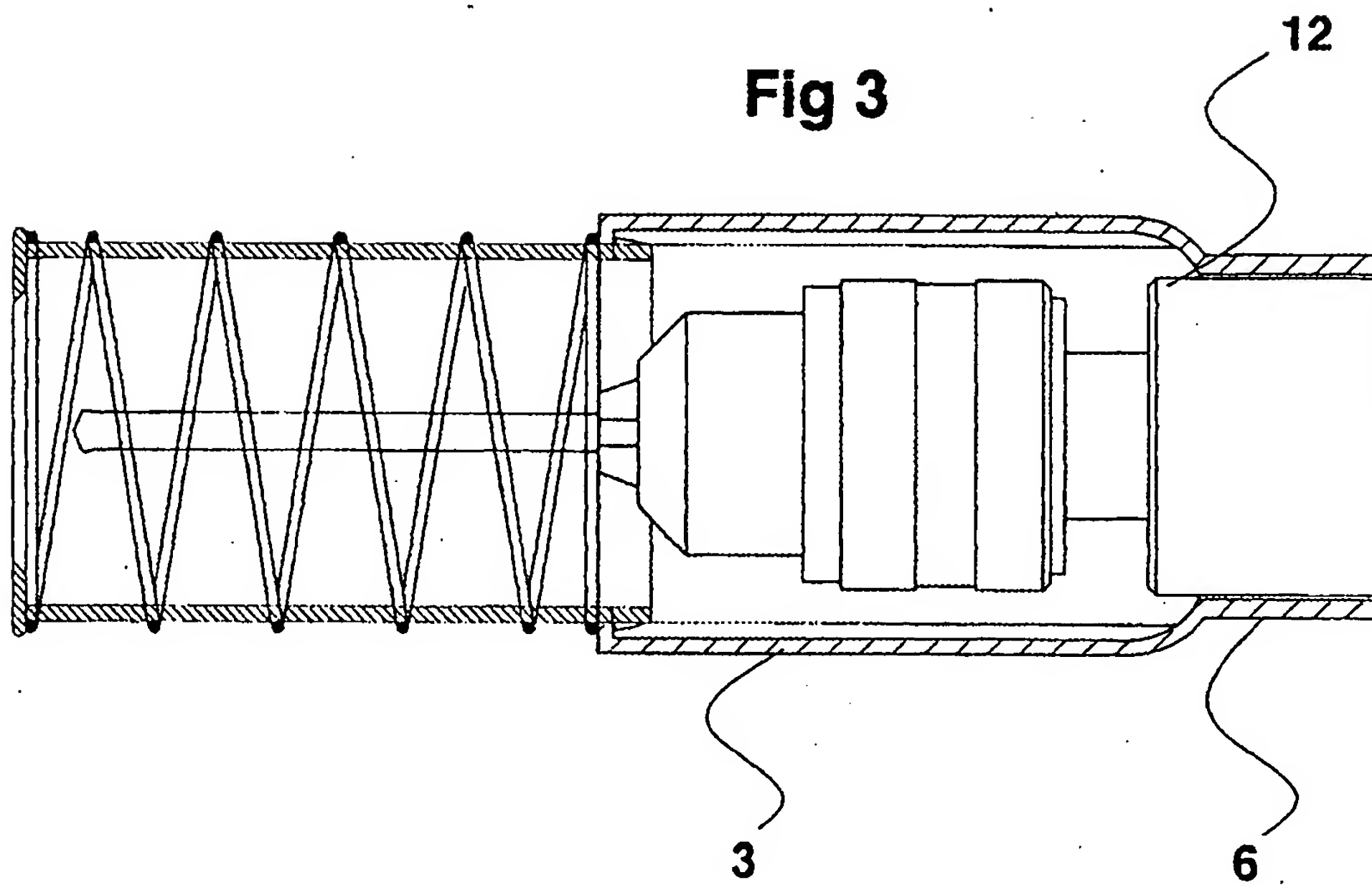
**Fig 1**



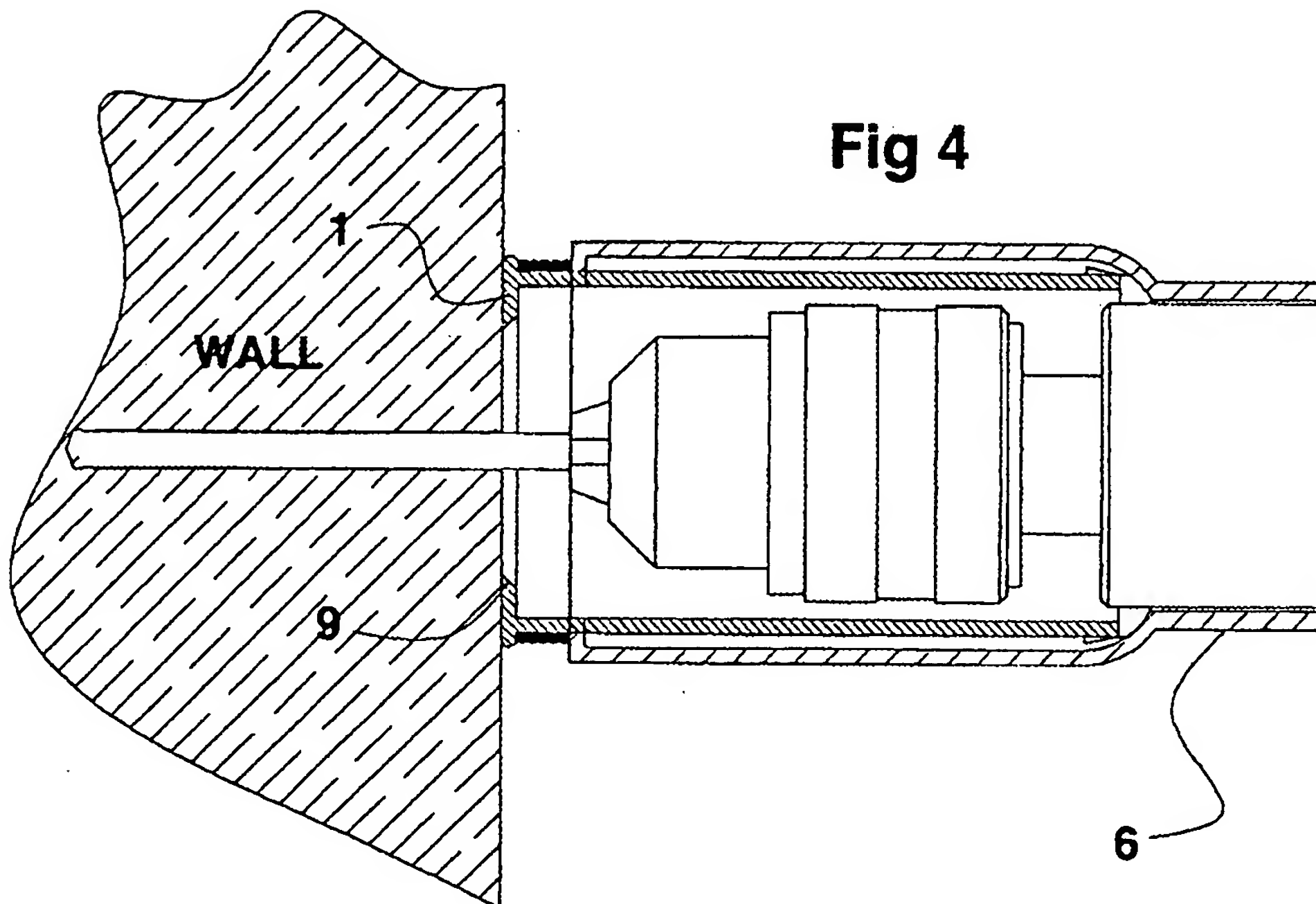
**Fig 2**



**Fig 3**



**Fig 4**



## POWERED HAND DRILL ACCESSORY

This invention relates to a powered hand drill accessory.

Powered hand drills customarily have electrically driven motors powered by either mains Alternating Current or self contained rechargeable batteries. The main purpose for such a device is to bore holes into various surfaces such as walls, ceilings and sheet material. Many such devices have a common sized cylindrical collar, typically known as 43mm DIN nosed drills, for the purpose of attaching various accessories.

Powered hand drills, however, can be difficult to use, messy, potentially dangerous and inaccurate.

According to the present invention there is provided a powered hand drill accessory comprising a clear inner tube, an outer tube containing the clear inner tube so as to allow both parts to act telescopically, means to attach and detach the tubes from a powered hand drill body, and a compression spring trapped between the two tubes so as to force them apart into an extended position when at rest.

A specific embodiment of the invention will now be described by way of example with reference to the accompanying drawings in which:-

Figure 1 shows in perspective, the power drill accessory detached from the drill;

Figure 2 shows a sectional view through the centre;

Figure 3 shows a sectional view through the centre with the accessory at rest and attached to a drill; and

Figure 4 shows a sectional view through the centre with the accessory fully compressed and attached to a drill.

Referring to the drawings the accessory comprises a clear tube 4 sliding within an outer tube 3 which traps a compression spring 2 between two flanges.

In order to attach the accessory to a powered hand drill the outer tube 3 features a ring collar detail 6 which push fits with a gripping action onto a standard diameter shoulder 12 on the drill body as shown in figure 3 leaving the drill chuck and drill bit free to rotate within the accessory.

Once attached, the outer collar 1 of the clear tube 4 is positioned at right angles against the surface to be drilled and pressure applied to the drill body allows the clear tube 4 to slide in the direction of arrow 10 inside the outer tube 3 compressing the spring 2. The compressed accessory allows the drill bit to fully penetrate the drilled surface as shown in figure 4.

In order to be sure of the depth of hole drilled a graphic calibration 5 is included on the clear tube 4. The calibration can be read against the front rim of the outer tube 3.

Referring to figure 4, in order to retain debris or dust from the drilled surface the outer collar 1 of the clear tube 4 features an angled surface 9 which allows ingress of dust and debris into the clear tube 4 whilst retaining it there against the inner surface of the outer collar 1. As the drill accessory is removed from the drilled surface the spring 2 acts to keep the outer collar 1 against the surface thereby catching the debris.

In order for the clear tube 4 to slide inside the outer tube 3 a number of rails 11

are included on the inside of the outer tube 3 which run on the outer surface of the clear tube 4. The clear tube 4 is prevented separating from the outer tube 3 by means of a snap fit detail 7 which stops against the surface 8 as shown in figure 2.

To detached the accessory from the drill the accessory is pulled away from the drill body, sliding the ring collar 6 off the drill shoulder 12.

## CLAIMS

- 1 A powered hand drill accessory comprising a clear inner tube, an outer tube containing the clear inner tube so as to allow both parts to behave telescopically, means to attach and detach the tubes from a powered hand drill body, and a compression spring trapped between the two tubes so as to force them apart into an extended position when at rest.
- 2 A powered hand drill accessory as claimed in Claim 1 wherein the outer tube incorporates a number of raised rails on the inner surface thereof which control the sliding movement of the clear tube.
- 3 A powered hand drill accessory as claimed in Claim 1 or Claim 2 wherein the clear tube incorporates a graphic calibration.
- 4 A powered hand drill accessory as claimed in Claims 1 to 3 wherein catchment means is provided between the clear inner tube and the outer tube in order to arrest the sliding separation of the two tubes.
- 5 A powered hand drill accessory as claimed in any one of claims 1 to 4, wherein the clear inner tube incorporates an outer collar to both align the accessory at right angles to the drilled surface and also to contain any debris released from the drilled surface.
- 6 A powered hand drill accessory as claimed in any one of claims 1 to 5 wherein the clear inner tube is opaque.
- 7 A powered hand drill accessory substantially as described herein with reference to Figures 1-4 of the accompanying drawing.



Application No: GB 9824712.5  
Claims searched: 1-7

Examiner: Hal Young  
Date of search: 14 January 1999

**Patents Act 1977**  
**Search Report under Section 17**

**Databases searched:**

UK Patent Office collections, including GB, EP, WO & US patent specifications, in:

UK Cl (Ed.Q): B3C ; B4C

Int Cl (Ed.6): B08B(15/04) ; B23B(47/00, 34) ; B23Q(11/00)

Other: ONLINE DATABASES: WPI

**Documents considered to be relevant:**

Category	Identity of document and relevant passage	Relevant to claims
Y	GB 2139124 A (TRELLEBORG), see fig and note depth gauge 11.	3
Y	US 5765654 (HILTI), see fig 1.	1,3-6
A	US 5653561 (MAY)	
A	US 5160230 (CUEVAS)	
A	US 5061123 (BROUSSARD)	
X,Y	DE 3140776 A1 (SCHÖNHERR), see figs 2 and 4.	X:1,4-6 Y:3
Y	FR 2441455 (DAUBAN), see figs.	1,3-6

X	Document indicating lack of novelty or inventive step	A	Document indicating technological background and/or state of the art.
Y	Document indicating lack of inventive step if combined with one or more other documents of same category.	P	Document published on or after the declared priority date but before the filing date of this invention.
&	Member of the same patent family	E	Patent document published on or after, but with priority date earlier than, the filing date of this application.